

are not at all certain, and, although I have used the classical terminology, this is no more than a preliminary interpretation.

Adult.—Length of forewing, 6 mm. Color grey, legs pale brownish. Abdomen without sternal processes. Male genitalia: Ninth sternum large, posterior margin obliquely angulate laterally, with a smooth, impressed midventral line. Ninth tergum smooth, small, rounded anteriorly; with a bandlike lateral sclerite continuous along dorsal margin of sternum. Tenth tergite a long, swordlike process directed posteriorly beneath lobes of aedeagus. Claspers small, with an apicoventral point, and a terete, membranous lateral lobe; mesoventrally with a structure, trianguloid in ventral aspect, complex internally. Aedeagus with a tubular basal portion; apex developed into a pair of crenulate, membranous, hemispherical lobes which give rise to a basolateral process curving beneath lobes and becoming heavily sclerotized apically, apicomesally with a rounded, membranous lobe (apical structures do not seem to be retractable within tubular portion).

Holotype, male.—Chile, Prov. Malleco, Rio Manzanares, near Puren, 2 Jan. 1966, Flint & Cekalovic. USNM 70434. Paratypes.—Same data, 1 ♂, 3 ♀. Prov. Malleco, Parque Nacional Contulmo, 2 Jan. 1966, Flint & Cekalovic, 2 ♂ ♂, 1 ♀. Prov. Cautin, Rio Cautin, Cajon, 3 Jan. 1966, Flint & Cekalovic, 1 ♀.

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WEST INDIAN WASPS OF THE SUBFAMILY PRISTOCERINAE  
(HYMENOPTERA: BETHYLIDAE)

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ABSTRACT—Three genera of Pristocerinae occur in the West Indies, but all three have been known from only a few specimens. Much recently collected material from Cuba and from Jamaica indicates that there are several species of Pristocerinae on each island, with no species reported from any two islands of the Greater Antilles. Female Pristocerinae are apterous, and hence have poor dispersal powers as compared to Epyrinae and Bethylinae, several species of which occur widely in the West Indies. In the genus *Pseudisobrachium*, previously unrecorded from Cuba and Jamaica, 11 new species are here described, 3 from Cuba and 8 from Jamaica. In *Apenesia*, 4 new species are here described, 3 from Jamaica and 1 from Cuba, and new records are presented for a previously described species. In *Dissomphalus* 1 new species is described from Jamaica and 1 from Cuba.

In my Synopsis of the American Bethylidae (Evans, 1964) I recorded 33 species of Bethylidae from the West Indies (not including Trinidad). In a recent paper (Evans, 1969), I have reported 19 species from the island of Dominica alone, 13 of them previously

undescribed. Obviously we have a way to go before the bethylid fauna of the West Indies is fully understood. It now appears that many of the Epyrinae and Bethylinae (which are usually fully winged in both sexes) occur on several islands or even on the continent, while most of the Pristocerinae, in which the females are completely apterous, are restricted to one or a few closely grouped islands. The present paper is based principally upon an excellent collection of Pristocerinae taken in Jamaica by Henry F. Howden and Edward C. Becker, of the Entomology Research Institute, Ottawa, primarily in Malaise traps. I have also studied some interesting Cuban material sent to me by Pastor Alayo D. of the Academia de Ciencias de Cuba, Habana, as well as a small amount of additional material, all from Cuba and Jamaica. This new material includes 18 species of Pristocerinae, all but one of them new. The genus *Pseudisobrachium* Kieffer, previously unrecorded from Cuba and Jamaica, is represented by the largest number of species, 11, while *Dissomphalus* Ashmead and *Apenesia* Westwood are represented by 2 and 4 each.

The material treated here is included in the collections of the following five institutions, which are abbreviated in the text as follows:

ACC: Academia de Ciencias de Cuba, Habana

AMNH: American Museum of Natural History, New York

CNC: Canadian National Collections, Ottawa

MCZ: Museum of Comparative Zoology, Cambridge

USNM: United States National Museum, Washington

Abbreviations of body parts are the same as in my Synopsis, but they are repeated here for the sake of convenience:

DAO: diameter of anterior ocellus

HE: height of eye (lateral view)

LFW: length of fore wing

LH: length of head (apical margin of clypeus to median vertex crest)

OOL: ocello-ocular line (minimum distance, eye to lateral ocellus)

WF: width of front (minimum)

WH: width of head (maximum, including eyes)

WOT: width of ocellar triangle (including lateral ocelli)

#### Genus *Apenesia* Westwood

Although *Apenesia* is a large genus in the American tropics, only three species, each represented by one specimen, were reported from the West Indies in my revision of that genus (Evans, 1963). The present paper includes the description of one new species from Cuba (the first record of the *Exilis* species-group from the West Indies) and three from Jamaica.

***Apenesia cubensis* Evans, 1963**

I described this distinctive member of the *Mexicana* species-group from a single male from Pico Turquino, Oriente, Cuba. Two additional Cuban specimens are very similar to the type in size, color, and sculpture: 1♂, Gran Piedra, Oriente, June 1967 (Alayo); 1♂, Topes de Collantes, Sierras de Trinidad, Las Villas, June 1962 (Alayo) [both ACC].

***Apenesia jamaica*, n. sp.**

(Fig. 1)

*Holotype*.—♂, JAMAICA: Hardwar Gap, 4000 feet, 6 July 1966 (Howden & Becker) [CNC]. *Paratype*.—♂, same data except 25 July 1966 [MCZ].

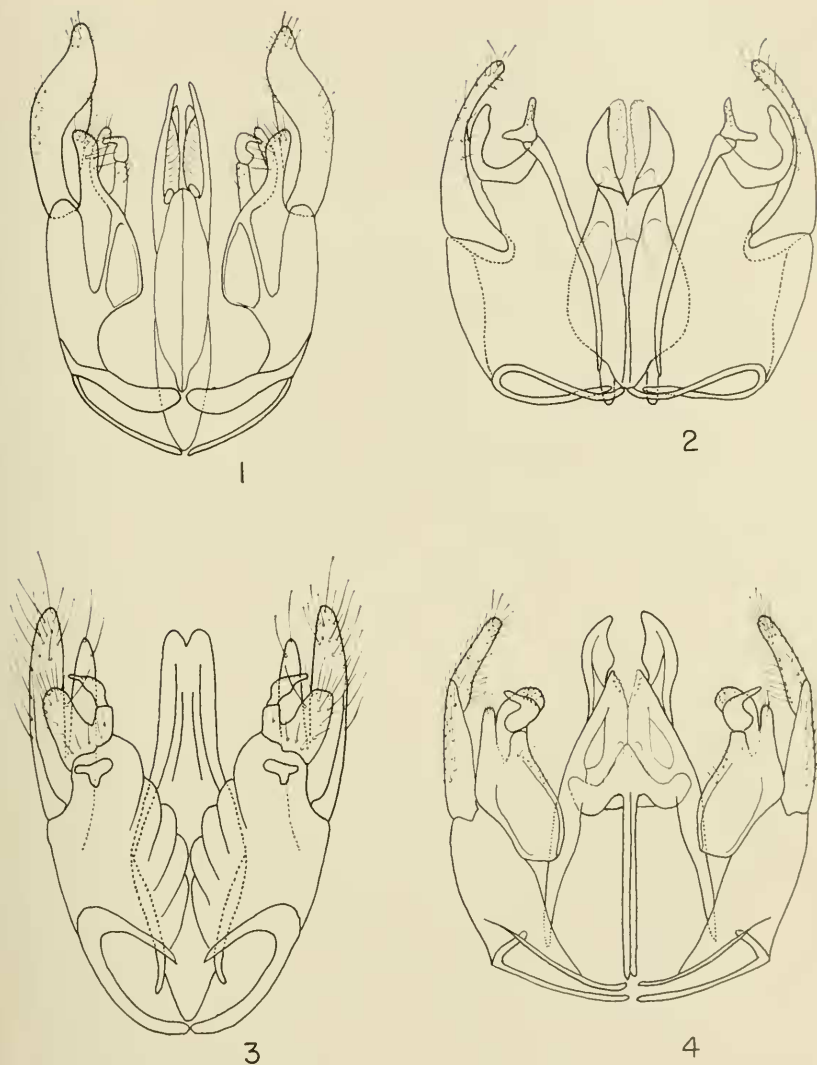
*Description of type*.—Length 4.2 mm; LFW 3.2 mm. Black; mandibles testaceous, the teeth rufous; first two antennal segments light brown, remainder dark brown; legs testaceous, tarsi slightly darker than other parts; wings subhyaline. Mandibles with four large, sharp teeth; clypeus with a strong median carina, the apical margin rounded, with a small median tooth; eyes large, glabrous, weakly protuberant. Antennae elongate, segments three and eleven both about  $3 \times$  as long as wide; flagellar pubescence semierect, bristling, setulae about .7 as long as width of flagellum. WH  $.96 \times$  LH; WF  $1.1 \times$  HE; vertex forming a broad, smooth arc far above eye tops; ocelli not notably enlarged, OOL  $1.3 \times$  WOT. Front alutaceous although somewhat shining, with small, inconspicuous punctures; transverse carina of pronotum strong, arching; notauli very strong, nearly complete. Propodeal disc  $1.15 \times$  as wide as long, median carina complete to the strong transverse carina, basal triangle filled with numerous strong, longitudinal carinae and a few weak cross-carinae; posterior, lateral parts of disc alutaceous. Mesopleurum alutaceous, with a strong, arching scrobal groove. Discoidal vein of fore wing very faintly pigmented. Abdomen sessile; subgenital plate arcuately emarginate; genitalia as figured.

*Remarks*.—The paratype is very similar to the type in size, color, and standard measurements. This species runs readily to *cubensis* Evans in my 1963 key, and it is similar to that species in size and in most details of color and sculpture. However, the genitalia are highly diagnostic in this genus, and the very different aedocagus indicates that these specimens cannot be conspecific with *cubensis*. Other differences include the stronger notauli and more extensive propodeal sculpturing of *jamaica*, also the narrower front and darker antennae.

***Apenesia insulana*, n. sp.**

(Fig. 2)

*Holotype*.—♂, JAMAICA: Hardwar Gap, 4000 feet, 13 July 1966 (Howden & Becker) [CNC]. *Paratypes*.—4♂♂, same data except one 25 July, one 29 July 1966 [CNC, MCZ].



Figs. 1-4, male genitalia of Pristocerinae, ventral aspect: 1, *Apenesia jamaica*, n. sp.; 2, *A. insulana*, n. sp.; 3, *Pseudisobrachium praecipuum*, n. sp.; 4, *A. luteola*, n. sp.

*Description of type*.—Length 2.6 mm; LFW 2.5 mm. Black; mandibles light brown, darker at base and apex; first two antennal segments testaceous, remainder dark brown; legs, including all coxae, straw-colored; wings lightly tinged with brownish. Mandibles with a strong apical tooth above which are two minute teeth followed by an oblique cutting edge; clypeus tridentate, with a small angulation at the end of the median carina, this flanked by two rounded projections;

eyes protruding, covered with short hairs. Antennae of moderate length, segments three and eleven both about twice as long as wide; flagellar pubescence semi-erect, setulae only slightly shorter than width of flagellum. WH  $1.02 \times$  LH; WF  $1.25 \times$  HE; vertex broadly rounded off well above eye tops, but distance from eye tops to vertex crest much less than eye height; ocelli not enlarged, OOL  $1.3 \times$  WOT. Front alutaceous, punctures shallow and inconspicuous. Thoracic dorsum uniformly alutaceous, punctures small and inconspicuous; pronotum short, without a transverse carina; mesoscutum with strong, complete notauli. Propodeal disc  $1.2 \times$  as wide as long, median carina not reaching transverse carina, which is weak; median area reticulate, disc with a U-shaped smooth area just behind the basal triangle. Mesopleurum alutaceous, the scrobal groove strong, foveolate, extending straight forward rather than arching upward. Discoidal vein of fore wing strong, longer than basal vein. Abdomen sessile; subgenital plate broad, weakly emarginate; genitalia as figured.

*Remarks.*—The paratypes exhibit no important variation, although some are smaller (LFW 1.8–2.6 mm). This species is closely related to *dissocephaloides* Evans and *denticulata* Evans, particularly the latter (described from Veracruz, Mexico), but the genitalia are distinctive and there seems little question that it is specifically distinct.

*Apenesia luteola*, n. sp.

(Fig. 4)

*Holotype.*—♂, CUBA: Soroci, Pinar del Rio, March 1963 (Alayo-Garcia Coll.) [ACC].

*Description of type.*—Length 3.3 mm; LFW 2.5 mm. Head testaceous except mandibles rufous apically and ocellar triangle fuscous; eyes dark gray; thorax largely testaceous except mesoscutum and anterior half of scutellum castaneous; propodeum dark castaneous; abdomen testaceous on basal third, remainder dark castaneous; first two antennal segments straw-colored; wings hyaline. Mandibles short and broad, with five sharp teeth; clypeus short, subtruncate; eyes glabrous, strongly protuberant. Antennae slender, segment three about  $2.5 \times$  as long as wide, segment eleven  $3 \times$  as long as wide; flagellar pubescence pale, semi-erect, nearly as long as width of flagellum. WH  $.97 \times$  LH; front narrow, WF  $.95 \times$  HE; ocelli enlarged, DAO  $.26 \times$  WF; OOL and WOT subequal; anterior ocellus slightly above level of eye tops. Front uniformly alutaceous, somewhat shining, obscurely punctate. Pronotum without a transverse carina, short, abruptly expanded from front to rear; notauli linear, complete; propodeum with a strong median carina which nearly reaches the crest of the declivity, but without a transverse carina, its dorsal surface alutaceous. Mesopleurum alutaceous, obscurely punctate, with a pit in the center but no well defined scrobal groove or callus. Discoidal vein of fore wing fairly long although weakly pigmented, arising about halfway down on transverse median vein. Abdomen sessile; genitalia as figured.

*Remarks.*—This is a fairly typical member of the *Exilis* species-group and runs to *cochise* Evans in my 1963 key except for the narrower front and much paler coloration. It differs from *martini* Evans, de-

scribed from Florida, in the more distinct notauli, paler color, and very different genitalia.

***Apenesia vauricorum*, n. sp.**

*Holotype*.—♀, JAMAICA: Hardwar Gap, 4800 feet, 13–15 July 1960 (P. & C. Vaurie) [AMNH].

*Description of type*.—Length 7 mm. Pale in color, thorax lighter than head and abdomen; head pale ferruginous; thorax, propodeum, and legs in their entirety, testaceous (slightly darker along thoracic sutures); abdomen castaneous, with indistinct lighter transverse bands; mandibles pale ferruginous, apical half dusky; antennae testaceous, middle flagellar segments slightly darkened. Mandibles with two large, sharp apical teeth; clypeus very short, transverse, its apical margin truncate and with a series of strong setae. Antennae very short, first four segments in a ratio of 37:8:8:7, segments 4–12 wider than long, apical segment twice as long as wide; flagellum with coarse, semierect setulae. Head subquadrate, but its sides roundly convergent on posterior half to a nearly straight vertex; head  $1.10 \times$  as long as wide. Eyes elliptical, approximately as long as width of flagellum, dark in color, each with about 10 facets. Head shining, weakly alutaceous, virtually impunctate. Thoracic dorsum also weakly alutaceous and virtually impunctate; pronotal disc  $1.2 \times$  as long as its posterior width, anterior margin with a small median notch; mesoscutum  $.7$  as long as wide; propodeum  $2.25 \times$  as long as its maximum width, maximum width  $1.7 \times$  minimum width; propodeal formula 38:25:42. Mesopleurum with dorsal surface rounded gradually onto the sides. Abdomen sessile, strongly depressed on apical half, with a few setae ventrally and on the apical tergite.

*Remarks*.—This species differs from the Jamaican *delicata* Evans in size, color, head shape, larger number of eye facets, sessile abdomen, and several other features. It is very similar to the Central American species *chontalica* Westwood and *flavipes* Cameron, but differs from these species in having both the head and propodeum more elongate.

Genus ***Dissomphalus*** Ashmead

This is a large genus in the American tropics, and only a few of the species have been described. I take this occasion to describe one new species from Cuba and one from Jamaica, both members of the *Xanthopus* species-group (like the other known Cuban species, *collaris* Evans). Besides these three species, one is known from Haiti and several from the Lesser Antilles.

***Dissomphalus ellipticus*, n. sp.**

*Holotype*.—♂, CUBA: Santa Rosario, Pinar del Rio, March 1968 (I. Garcia) [ACC].

*Description of type*.—Length 3.5 mm; LFW 2.6 mm. Black; mandibles largely testaceous; first two antennal segments light brown, remainder medium brown; coxae and femora straw-colored, tibiae and tarsi testaceous; wings subhyaline.

Mandibles bidentate; clypeus tridentate, lateral teeth more rounded than the small median tooth, which is at the end of a strong median carina; eyes sparsely short-haired. Antennae long for the genus, segment three  $1.6 \times$  as long as wide, segment eleven  $2.3 \times$  as long as wide; flagellar pubescence nearly as long as width of flagellum. WH  $.97 \times$  LH; front broad, WF  $1.4 \times$  HE; distance from eye tops to vertex crest nearly equal to eye height; ocelli small, OOL  $1.33 \times$  WOT. Front strongly alutaceous, rather dull, punctures obscure. Thoracic dorsum slightly more shining than front; pronotum without a transverse ridge; notauli linear, complete. Propodeal disc  $1.4 \times$  as wide as long, with a complete median carina and a rather weak but complete transverse carina; disc wholly alutaceous, with heavier sculpturing toward the base. Discoidal cell of fore wing fully outlined, discoidal vein interstitial with media. Second tergite smooth and without large setae, with a pair of large, oblique, dorsolateral elliptical areas forming rather deep, bowl-like depressions, each depression bearing on its anterior third a minute umbilicate pit from which a small pencil of setae arises.

*Remarks.*—Elliptical, bowl-shaped tergal pits occur also in the Central American *rufipalpis* Kieffer and in the Cuban *collaris* Evans; in the former species, however, the pits contain a linear series of spines, and in *collaris* the pits are smaller and more transverse. Both species differ from *ellipticus* in several other details, but I would assume that the three are closely related.

**Dissomphalus nanellus**, n. sp.

*Holotype.*— $\delta$ , JAMAICA: Hardwar Gap, 4000 feet, 6 July 1966 (Howden & Becker) [CNC]. *Paratype.*—1 $\delta$ , same data except 25 July 1966 [MCZ].

*Description of type.*—Length 2.0 mm; LFW 2.0 mm. Head and thorax piceous, abdomen dark brown, paler apically; mandibles largely testaceous; antennae uniformly medium brown; legs testaceous except coxae and trochanters straw-colored; wings subhyaline. Mandibles with a large apical tooth and three minute, additional teeth; clypeus produced and trilobed apically, median line elevated but not sharply carinate; eyes weakly short-haired. Antennae moderately long, segments three and eleven both about  $1.8 \times$  as long as wide; flagellar pubescence coarse, semierect. WH and LH subequal; WF  $1.2 \times$  HE; vertex broadly rounded off well above eye tops; ocelli not enlarged, OOL  $1.1 \times$  WOT. Front moderately alutaceous, rather shining, obscurely punctate. Thoracic dorsum shining, rather weakly alutaceous; pronotum short, without a transverse ridge; notauli strong, complete. Propodeal disc  $1.2 \times$  as wide as long, median carina obsolescent behind and transverse carina indistinct medially; disc smooth and polished behind, strongly sculptured in the basal triangle. Discoidal vein strong, interstitial with media. Second tergite with a pair of shallow lateral depressions, each bearing a minute pit with raised margins which gives rise to a short tuft of setae; laterad of each depression there are a few short setae.

*Variation.*—The paratype is even smaller (LFW 1.8 mm) and has the ocellar triangle farther removed from the eyes, OOL being  $1.3 \times$

WOT. In this specimen the first two antennal segments are testaceous, considerably paler than the remainder of the antennae.

Genus **Pseudisobrachium** Kieffer

Although this is perhaps the largest genus of Bethyilidae in the New World, only three species have been known from the West Indies, only one from the Greater Antilles (*terresi* Mann, from Haiti). I was surprised to discover that Howden and Becker had taken 71 specimens assignable to 8 species at one locality in Jamaica. All but one of these species belong to the *Obscurum* species-group, otherwise known from Central America, Mexico, and southwestern United States. The remaining Jamaican species, described as *praecipuum*, has several unique features and may represent an earlier invasion of the island. I shall also take this occasion to describe three Cuban species, since the genus has not previously been reported from that island. Each of the Cuban species appear to belong to a different species-group, in each case to groups having their apparent centers of distribution in Mexico and southwestern United States. Separate keys are provided for the Cuban and Jamaican forms, the Cuban species being treated first. All species are known only from males, all of which lack any special modifications of the subgenital plate and genitalia such as occur in some South and Central American species.

KEY TO CUBAN **Pseudisobrachium** (MALES)

1. Eyes and ocelli small, WF 1.55 × HE, OOL 1.6 × WOT; vertex, in frontal view, broad and nearly straight (fig. 5) ..... **bruesi**, n. sp.  
Eyes and ocelli enlarged, DAO at least .20 × WF, WF 1.0–1.2 × HE, OOL at most 1.1 × WOT; vertex more narrow and rounded (Figs. 6, 9) ..... 2
2. Head and thorax black, abdomen fusco-ferruginous; LFW 2.4–3.3 mm; front shining, non-alutaceous, with strong punctures ..... **alayoi**, n. sp.  
Head dark brown, thorax pale castaneous, abdomen testaceous; LFW 1.5–1.8 mm; front somewhat alutaceous, obscurely punctate ..... **parcum**, n. sp.

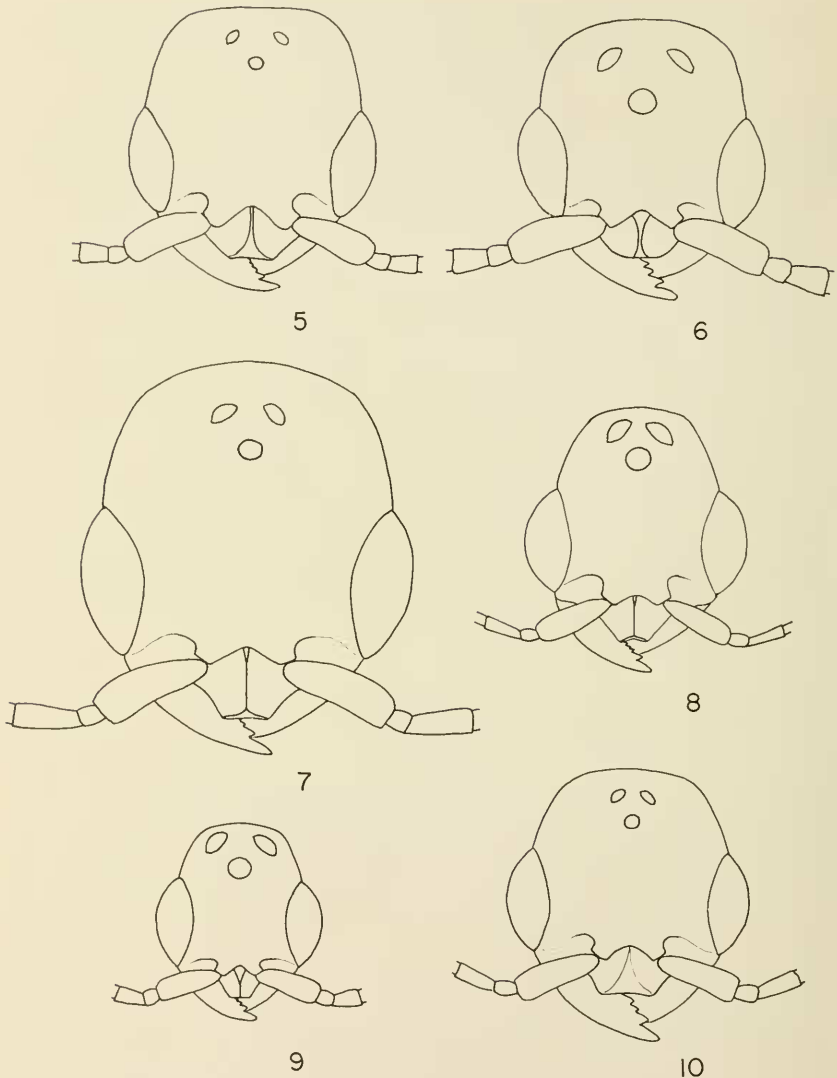
**Pseudisobrachium bruesi**, n. sp.

(Fig. 5)

*Holotype*.—♂, CUBA: Soledad, Cienfuegos, Las Villas, Jan.–Feb. 1927 (C. T. & B. B. Brues) [MCZ].

*Description of type*.—Length 3.0 mm; LFW 2.3 mm. Piceous, head very slightly darker than thorax and abdomen; mandibles testaceous; first two antennal segments testaceous, remainder dull rufo-testaceous; legs wholly testaceous; wings hyaline, veins and stigma amber. Mandibles broad, 5-toothed, basal three teeth short and rounded; clypeus truncate, with a Y-shaped median elevation, polished between the arms of the Y. Antennae short, segments three and eleven only about 1.5 × as long as wide; flagellar pubescence short, subappressed, flagellum also with numerous short, fully erect setulae. Head subquadrate, sides subparallel behind eyes for a distance nearly equal to eye height, then abruptly rounded to a broad,





Figs. 5-10, heads of male *Pseudisobrachium*, anterior view: 5, *P. bruesi*, n. sp.; 6, *P. alayoi*, n. sp.; 7, *P. jamaicense*, n. sp.; 8, *P. turbinatum*, n. sp.; 9, *P. parcum*, n. sp.; 10, *P. praecipuum*, n. sp. Heads are drawn to same scale, and all specimens figured are the holotypes.

straight vertex; WH  $.97 \times$  LH; front broad, WF  $1.55 \times$  HE; ocelli not enlarged, DAO  $.14 \times$  WF, OOL  $1.6 \times$  WOT. Front strongly alutaceous, weakly shining, punctures numerous but very shallow. Thoracic dorsum alutaceous, weakly punctate; notauli weakly impressed on anterior third of scutum; propodeum of

moderate length, weakly sculptured except for a strong median carina. Mesopleurum alutaceous and without a well-defined callus. Discoidal vein of fore wing evident but unpigmented.

*Remarks.*—The five-toothed mandibles would appear to place this species in the *Obscurum* species-group, but the basal three teeth are more rounded and weakly separated than is usual in this group, so that this species resembles closely certain members of the *Carbonarium* group, such as *ashmeadi* Evans, which occurs in eastern United States south to Florida.

***Pseudisobrachium parcum*, n. sp.**

(Fig. 9)

*Holotype.*—♂, CUBA: Soledad, Cienfuegos, Las Villas, 6–20 August (Berlese funnel, N. A. Weber) [MCZ]. *Paratype.*—♂, same locality, but collected at light, May 1968 (no collector given) [ACC].

*Description of type.*—Length 2.2 mm; LFW 1.8 mm. Head dark brown; thorax pale castaneous; abdomen testaceous; mandibles and first two antennal segments testaceous, remainder of antenna pale ferruginous; legs wholly testaceous; wings hyaline, with light brown veins and stigma. Mandibles 5-toothed; clypeus narrowly truncate, with a strong median ridge; eyes large, protuberant, hairy. Antennae slender, segments three and eleven about  $1.5 \times$  as long as wide; flagellum with coarse, semi-erect setulae and numerous fully erect setulae. Head elongate, WH  $.94 \times$  LH; front narrow between the large eyes, WF and HE subequal; ocelli enlarged, DAO  $.30 \times$  WF, OOL  $.62 \times$  WOT. Front weakly alutaceous, somewhat shining, punctures numerous but shallow. Thoracic dorsum alutaceous, punctures weak but distinct; pronotum elongate; notauli weakly impressed on anterior half of scutum; propodeum very long, in dorsal view  $1.8 \times$  as long as wide. Mesopleurum weakly alutaceous, without a well defined callus. Discoidal cell of fore wing weakly outlined.

*Remarks.*—The paratype is even smaller than the type (LFW 1.5 mm) and has the head even more elongate (WH  $.91 \times$  LH); in this specimen the ocelli are not as large, DAO being  $.20 \times$  WF, OOL  $1.1 \times$  WOT. In other respects the two specimens are similar. I would assign this species to the *Occidentalis* species-group on the basis of the 5-toothed mandibles and elongate propodeum. This group is otherwise known from Mexico and southwestern United States.

***Pseudisobrachium alayoi*, n. sp.**

(Fig. 6)

*Holotype.*—♂, CUBA: Soledad, Cienfuegos, Las Villas, May 1968 (at light) (no collector given) [ACC]. *Paratypes.*—2♂♂, same locality, Aug., Sept. 1964 (one labeled "a la luz," the other P. Alayo Coll.) [ACC, MCZ].

*Description of type.*—Length 4.6 mm; LFW 3.3 mm. Head and thorax black, abdomen fusco-ferruginous; mandibles testaceous, the teeth rufous; first two

antennal segments testaceous, remainder dull, light brown; legs wholly straw-colored; wings subhyaline, veins light brown, stigma dark brown. Mandibles with 5 large, sharp apical teeth; clypeus truncate, with a Y-shaped median elevation, slightly concave between the arms of the Y; eyes densely hairy, weakly protuberant. Antennae elongate, segment three  $2.3 \times$  as long as wide, segment eleven  $1.8 \times$  as long as wide; flagellar pubescence short, subappressed, flagellum also with numerous fully erect setulae. WH  $.98 \times$  LH; WF  $1.2 \times$  HE; ocelli somewhat enlarged, DAO  $.23 \times$  WF, OOL  $.85 \times$  WOT; vertex forming a broad, even arc above eye tops, distance from eye tops to vertex crest about  $.6 \times$  HE. Front polished, non-alutaceous, punctures strong, separated by about their own diameters, slightly more widely spaced on the vertex. Pronotum shining, with strong punctures and fine transverse striae; mesoscutum polished, strongly and closely punctate, notauli deeply impressed on anterior  $.8$  of disc. Propodeum of moderate length,  $1.7 \times$  as long as wide, basal part reticulate and with a strong median carina, posterior part with fine transverse striations. Mesopleurum with a well defined, polished callus, elsewhere rather weakly punctate. Discoidal cell of fore wing weakly outlined by pigmented lines.

*Remarks.*—Both paratypes are smaller than the type (LFW 2.4 mm in both) and have a slightly narrower front (WF  $1.1 \times$  HE), but they are otherwise very similar. This species is similar to *crassum* Evans, described from Texas, but the form of the clypeus is different, the coxae are all pale, and the discoidal cell is distinct.

#### KEY TO JAMAICA *Pseudisobrachium* (MALES)

1. Mandibles with 3–4 teeth; antennae short, segments 4–12 less than twice as long as wide; mesopleural callus well defined, convex and shining ..... **praecipuum**, n. sp.
- Mandibles with 5 teeth; antennae elongate, segments 4–12 at least twice as long as wide; mesopleural callus ill defined ..... 2
2. Ocelli small or at least not greatly enlarged, DAO not more than  $.18 \times$  WF, OOL much exceeding WOT; eyes relatively small, WF at least  $1.4 \times$  HE (as in fig. 7) ..... 3
- Ocelli much enlarged, DAO exceeding  $.20 \times$  WF, OOL subequal to or less than WOT; eyes large, strongly protuberant, WF at most about  $1.2 \times$  HE (as in fig. 8) ..... 7
3. Propodeum with numerous sharply defined transverse carinae dorsally and on the posterior slope; mesopleurum with subcontiguous, crater-like punctures anteriorly ..... **transversum**, n. sp.
- Propodeum without such transverse carinae; mesopleurum at most obscurely punctate ..... 4
4. Legs wholly dark brown; mesopleurum with the lower, horizontal part of the scrobal groove strong and with another, anterior horizontal groove below and not connected with the scrobal groove ..... **howdeni**, n. sp.
- Legs straw-colored basally, darkened slightly toward apex; mesopleurum without a second groove besides the scrobal groove ..... 5
5. Clypeus broadly, shallowly emarginate; notauli impressed over anterior  $.7$  of mesoscutum; LFW 4.3–4.5 mm ..... **bisulcatum**, n. sp.

- Clypeus tapering to a narrow, truncate or slightly emarginate apex; notauli impressed on no more than anterior .3 to .5 of mesoscutum; LFW 2.0–4.0 mm ..... 6
6. Flagellar pubescence subappressed, rather short (except for scattered fully erect setulae); LFW 3.0–4.0 mm ..... *jamaicense*, n. sp.  
 Flagellar pubescence coarse, semierect, setulae at least half as long as width of flagellum; LFW 2.0–2.9 mm ..... *beckeri*, n. sp.
7. Head higher than wide, the head much contracted behind the eyes, vertex narrowly rounded; OOL and WOT subequal; clypeus with an apical notch ..... *turbinatum*, n. sp.  
 Head slightly wider than high, distance from eye tops to vertex crest much less than eye height; WOT exceeding OOL; apical margin of clypeus weakly convex ..... *pseudoobscurum*, n. sp.

***Pseudisobrachium howdeni*, n. sp.**

*Holotype*.—♂, JAMAICA: Hardwar Gap, 4000 feet, 29 July 1966 (Howden & Becker) [CNC]. *Paratypes*.—7 ♂♂, same data except various dates 6–29 July [CNC, MCZ, USNM].

*Description of type*.—Length 5.0 mm; LFW 4.0 mm. Black, mandibles ferruginous on apical third; antennae dark brown; legs wholly dark brown; wings subhyaline, with dark setulae and dark veins and stigma. Mandibles 5-toothed; clypeus tectiform medially, narrowly truncate apically; eyes protuberant, strongly hairy. Antennae elongate, third and eleventh segments both about  $2.5 \times$  as long as wide; flagellar pubescence short, subappressed, the flagellum also with some fully erect setae, mostly about one third as long as width of flagellum. WH  $.98 \times$  LH; WF  $1.6 \times$  HE; sides of head strongly convergent behind the eyes to a narrowly rounded vertex, distance from eye tops to vertex crest subequal to HE; ocelli small, in a compact triangle, OOL  $1.5 \times$  WOT. Front alutaceous, somewhat shining, with distinct but shallow punctures. Thoracic dorsum alutaceous, weakly punctate; notauli deeply impressed on anterior .4 of scutum only, actually slightly wider toward posterior terminus than anteriorly. Propodeum short, its dorsal surface covered with reticulations, median carina present but not standing out strongly. Mesopleurum wholly alutaceous, weakly punctate, scrobal groove strong, discontinuous with a second, more anterior and ventral groove. Discoidal vein of fore wing strong, interstitial with media.

*Variation*.—The series is rather uniform in color, size, and sculpture. LFW varies from 3.5 to 4.1 mm; OOL varies from 1.4 to  $1.7 \times$  WOT; the sculpturing of the propodeum varies somewhat in details, the reticulations in some specimens having a strong longitudinal bias.

***Pseudisobrachium bisuleatum*, n. sp.**

*Holotype*.—♂, JAMAICA: Hardwar Gap, 4000 feet, 10 July 1966 (Howden & Becker) [CNC]. *Paratype*.—1♂, same data except 23 July 1966 [MCZ].

*Description of type*.—Length 5.0 mm; LFW 4.3 mm. Black; mandibles testaceous, the teeth rufous; first two antennal segments light brown, remainder

dark brown; coxae and femora straw-colored, tibiae and tarsi testaceous; wings lightly tinged with brown. Mandibles 5-toothed; clypeus shallowly emarginate apically; eyes small, protuberant, strongly hairy. Antennae elongate, segment three nearly  $3 \times$  as long as wide, segment eleven  $2.3 \times$  as long as wide; flagellar pubescence moderately coarse, semierect, setulae about one third as long as width of flagellum, erect setae numerous and slightly longer. WH  $.98 \times$  LH; front broad, WF  $1.7 \times$  HE; ocelli not enlarged, DAO  $.16 \times$  WF; OOL  $1.5 \times$  WOT; sides of head weakly convergent behind eyes, then abruptly convergent to a straight vertex, distance from eye tops to vertex crest nearly equal to eye height. Front very strongly alutaceous, with an abundance of very shallow punctures. Thoracic dorsum alutaceous, obscurely punctate; notauli linear, sharply impressed on anterior  $.7$  of scutum. Propodeum elongate, its median carina very strongly set off and occupying a shallow depression. Mesopleurum alutaceous, with shallow punctures, the strobil groove strong, callus not differentiated. Fore wing with the discoidal cell fully outlined.

*Variation.*—The single paratype is larger (LFW 4.5 mm) but very similar to the type in every respect.

***Pseudisobrachium transversum*, n. sp.**

*Holotype.*—♂, JAMAICA: Hardwar Gap, 4000 feet, 13 July 1966 (Howden & Becker) [CNC]. *Paratypes.*—2♂♂, same data except one 25 July 1966 [CNC, MCZ].

*Description of type.*—Length 4.7 mm; LFW 3.8 mm. Black; apical two-thirds of mandibles ferruginous; antennae dark brown; coxae and femora straw-colored, remainder of legs suffused with brown; wings tinged with brownish. Mandibles 5-toothed; clypeus narrowly truncate apically; eyes protuberant, short-haired. Antennae elongate, segments three and eleven both about  $3 \times$  as long as wide; flagellar pubescence subappressed, setulae about one third as long as width of flagellum. WH  $.93 \times$  LH; WF  $1.4 \times$  HE; sides of head roundly convergent behind eyes to a narrowly rounded vertex, distance from eye tops to vertex crest nearly equal to eye height; ocelli in a compact triangle, OOL  $1.65 \times$  WOT; ocelli enlarged only very slightly. Front strongly alutaceous, with many very shallow punctures. Thoracic dorsum strongly alutaceous, punctures of pronotum and mesoscutum fairly distinct; notauli strong on anterior  $.4$  of mesoscutum, absent behind. Propodeum of moderate length, with a distinct median carina and several other short basal carinae, otherwise covered with strong transverse carinae, including the posterior slope. Mesopleurum alutaceous, with a broad, foveolate scrobal groove, anterior part covered with subcontiguous, crater-like punctures. Discoidal vein of fore wing strong, arising a short distance down on transverse median vein.

*Variation.*—In both paratypes the head is only very slightly longer than wide (WH  $.96$ – $.97 \times$  LH); one paratype is smaller than the type (LFW 3.3 mm), and in this specimen the ocelli are not at all enlarged (OOL  $1.7 \times$  WOT).

***Pseudisobrachium jamaicense*, n. sp.**

(Fig. 7)

*Holotype*.—♂, JAMAICA: Hardwar Gap, 4000 feet, 25 July 1966 (Howden & Becker) [CNC]. *Paratypes*.—28 ♂♂, same data except various dates, 6–29 July [CNC, MCZ, USNM]; 1 ♂, Whitfield Hall, Blue Mts., near 4500 feet, 13–20 Aug. 1934 (P. J. Darlington, Jr.) [MCZ].

*Description of type*.—Length 5.0 mm; LFW 3.9 mm. Black; mandibles testaceous except darker at base and apex; first two antennal segments testaceous, remainder dark brown; coxae and femora straw-colored, tibiae and tarsi testaceous; wings lightly tinged with brown. Mandibles 5-toothed; clypeus tectiform medially, narrowly truncate apically; eyes slightly protuberant, short-haired. Antennae elongate, segments three and eleven both about  $2.5 \times$  as long as wide; flagellar pubescence short, subappressed, flagellum also with numerous short, erect setae. WH  $.95 \times$  LH; WF  $1.5 \times$  HE; sides of head weakly convergent behind eyes, then more abruptly convergent to a broadly rounded vertex; ocelli not enlarged, OOL  $1.7 \times$  WOT. Front strongly alutaceous, with an abundance of shallow, inconspicuous punctures. Thoracic dorsum alutaceous, obscurely punctate; notauli distinct on anterior third of scutum only. Propodeum of moderate length, its dorsal surface strongly reticulate, median carina present but not strongly differentiated. Mesopleurum strongly alutaceous, with shallow punctures anteriorly; scrobal groove strong, nearly complete, the callus not well differentiated. Discoidal vein of fore wing strong, arising a short distance down on the transverse median vein.

*Variation*.—LFW varies from 3.0 to 4.0 mm. There is no important color variation and variation in standard measurements is slight. In several specimens the propodeum is more densely reticulate than in the type, and in some cases the reticulations have a strong longitudinal bias, giving the effect of many irregular carinae.

***Pseudisobrachium beckeri*, n. sp.**

*Holotype*.—♂, JAMAICA: Hardwar Gap, 4000 feet, 25 July 1966 (Howden & Becker) [CNC]. *Paratypes*.—7 ♂♂, same data except three dated 13 July 1966 [CNC, MCZ, USNM].

*Description of type*.—Length 2.8 mm; LFW 2.2 mm. Head and thorax black, abdomen dark castaneous; mandibles in large part testaceous; first two antennal segments medium brown, remainder dark brown; legs wholly light brown; wings subhyaline. Mandibles 5-toothed; clypeus tapered to a narrow apex which is slightly emarginate; eyes protuberant, hairy. Antennae of moderate length, segments three and eleven both about twice as long as wide; flagellar pubescence semierect, fully erect setulae numerous, setulae more than half as long as width of flagellum. WH  $.94 \times$  LH; WF  $1.5 \times$  HE; sides of head roundly convergent behind eyes, vertex narrowly rounded, distance from eye tops to vertex crest subequal to eye height; ocelli small, OOL  $1.5 \times$  WOT. Front weakly alutaceous, somewhat shining, punctures obscure. Thoracic dorsum also weakly alutaceous, obscurely punctate; notauli deeply impressed on anterior .3 of mesoscutum, absent

behind. Propodeum of moderate length, median carina distinct, also with reticulate ridges toward the base. Mesopleurum alutaceous, obscurely punctate, the scrobal groove strong. Discoidal vein of fore wing arising a short distance down on transverse median vein.

*Variation*.—LFW varies from 2.0 to 2.9 mm, WH from .92 to .98  $\times$  LH, WF from 1.3 to 1.5  $\times$  HE, OOL from 1.5 to 1.75  $\times$  WOT. The larger specimens have the legs straw-colored basally. Despite variation in leg color and in head measurements, there appears to be a strong discontinuity between this species and the closely related *turbinatum*, n. sp. with respect to eye and ocellar size. It is possible, however, that the two represent diurnal and nocturnal populations of one species.

***Pseudisobrachium turbinatum*, n. sp.**

(Fig. 8)

*Holotype*.— $\delta$ , JAMAICA: Hardwar Gap, 4000 feet, 6 July 1966 (Howden & Becker) [CNC]. *Paratypes*.—10  $\delta$   $\delta$ , same data except various dates 6–29 July [CNC, MCZ, USNM].

*Description of type*.—Length 3.0 mm; LFW 2.8 mm. Head and thorax black, abdomen dark castaneous; mandibles testaceous, the teeth rufous; antennae wholly dark brown; front coxae light brown, other coxae and all trochanters and femora straw-colored, tibiae and tarsi testaceous; wings sub-hyaline, with dark setulae and veins. Mandibles 5-toothed; clypeus with a broadly V-shaped apical emargination; eyes strongly protuberant, covered with short hairs. Antennae slender, segments three and eleven both about 2.5  $\times$  as long as wide; flagellar pubescence very coarse, semierect, setulae nearly as long as width of flagellum. WH .93  $\times$  LH; WF 1.2  $\times$  HE; head very much narrowed behind eyes, the vertex narrowly rounded, distance from eye tops to vertex crest nearly equal to eye height; ocelli enlarged, in a compact triangle well above eye tops, DAO .25  $\times$  WF, OOL and WOT subequal. Front and thoracic dorsum alutaceous, obscurely punctate; notauli linear, impressed on anterior .4 of scutum only. Propodeum elongate, median carina long, reaching nearly to crest of declivity, disc also with a few short, incomplete longitudinal carinae besides the median carina. Mesopleurum weakly alutaceous, weakly punctate, with a strong scrobal groove but a weakly differentiated callus. Discoidal vein of fore wing strong, nearly interstitial with media.

*Variation*.—LFW varies from 2.4 to 3.5 mm. All specimens are closely similar to the type, there being very little variation in ocellar size or other features.

***Pseudisobrachium pseudoobscurum*, n. sp.**

*Holotype*.— $\delta$ , JAMAICA: Hardwar Gap, 4000 feet, 6 July 1966 (Howden & Becker) [CNC]. *Paratype*.— $\delta$ , same data except 25 July 1966 [MCZ].

*Description of type*.—Length 2.7 mm; LFW 2.3 mm. Castaneous, head slightly darker than thorax, abdomen somewhat paler; mandibles testaceous apically;

antennae medium brown; legs testaceous, front coxae brownish basally; wings subhyaline. Mandibles 5-toothed; apical margin of clypeus weakly convex; eyes large, strongly protuberant, strongly hairy. Antennae slender, segments three and eleven both slightly more than twice as long as wide; flagellar pubescence suberect, setulae about half as long as width of flagellum, fully erect setulae numerous. Head wider than high, WH  $1.04 \times$  LH; front narrow, WF  $1.05 \times$  HE; head narrowly rounded behind eyes, distance from eye tops to vertex crest much less than eye height; ocelli large, DAO  $.24 \times$  WF, OOL only  $.73 \times$  WOT, front angle of ocellar triangle less than a right angle. Front and thoracic dorsum obscurely punctate, alutaceous but somewhat shining; notauli impressed on anterior third of mesoscutum. Propodeum rather short, its surface somewhat shining, with a delicate median carina and several other short carinae near the base. Mesopleurum obscurely punctate, alutaceous but somewhat shining, with a strong scrobal groove. Discoidal vein of fore wing present as a long, dark streak.

*Variation*.—The paratype is smaller (LFW 2.1 mm) and has a slightly wider front (WF  $1.12 \times$  HE) and longer head (WH  $1.02 \times$  LH), but it is otherwise very similar to the type.

***Pseudisobrachium praecipuum*, n. sp.**

(Figs. 3, 10)

*Holotype*.— $\delta$ , JAMAICA: Hardwar Gap, 4000 feet, 6 July 1966 (Howden & Becker) [CNC]. *Paratypes*.—7  $\delta$   $\delta$ , same data except dated 25–29 July 1966 [CNC, MCZ, USNM]; 1  $\delta$ , Good Hope, 22 Aug. 1966 (H. F. Howden) [CNC].

*Description of type*.—Length 3.5 mm; LFW 2.6 mm. Head and thorax black, abdomen castaneous; mandibles light ferruginous; antennae dark brown; legs straw-colored except front coxae brown; wings lightly tinged with brown. Mandibles with four teeth, the basal two teeth broad and blunt; clypeus broadly truncate, the margin very slightly concave; eyes somewhat protuberant, covered with short hairs. Antennae unusually short, first three segments of normal length (segment three  $2.2 \times$  as long as wide) but segments 4–12 less than twice as long as wide (segment eleven  $1.7 \times$  as long as wide); flagellar pubescence semi-erect, erect setae numerous. Head wider than high, WH  $1.03 \times$  LH; front broad, WF  $1.65 \times$  HE, sides of head roundly convergent behind eyes, but distance from eye tops to vertex crest nearly equal to eye height; ocelli small, in a compact triangle, OOL  $1.8 \times$  WOT. Front alutaceous, weakly shining, with numerous very shallow punctures. Thoracic dorsum alutaceous but moderately shining, the mesoscutum quite distinctly punctate, notauli strong on anterior half of scutum. Propodeum elongate, dorsal surface with reticulate sculpturing, median carina fairly well defined. Mesopleurum with a convex, weakly alutaceous callus set off by broad, arching groove, remainder with large, shallow punctures. Discoidal vein of fore wing present as a rather weakly pigmented streak interstitial with media. Subgenital plate truncate; genitalia as figured.

*Variation*.—LFW varies from 2.5 to 3.2 mm. In three of the topotypic paratypes the basal two mandibular teeth are more or less completely fused into a broad, blunt tooth, so that the mandibles are 3-toothed.



WH/LH varies from 1.03 to 1.07, WF/HE from 1.5 to 1.7. There is no other variation worthy of note.

#### REFERENCES

- Evans, H. E. 1963. A revision of the genus *Apenesia* in the Americas (Hymenoptera, Bethyliidae). Bull. Mus. Comp. Zool. Harvard 130:251-359.
- . 1964. A synopsis of the American Bethyliidae (Hymenoptera, Aculeata). Bull. Mus. Comp. Zool. Harvard 132:1-222.
- . 1969. Bredin-Archbold-Smithsonian Biological Survey of Dominica. Bethyloidea (Hymenoptera). Smithsonian Contr. Zoology, no. 3, 14 pp.

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### AEDES CACOTHIUS DYAR, A SYNONYM OF AEDES VENTROVITTIS DYAR (DIPTERA: CULICIDAE)

Dyar (1923, Ins. Insc. Mens., 11:44) described *Aedes cacothius* as a new species based on six biting females collected at Shoshone Point, 8,200 feet, Yellowstone National Park, Wyoming. No larvae or adult males were collected. Dyar noted that the species "may be the Rocky Mountain representative of *Aedes ventrovittis* Dyar of the high elevations in the Sierras." *Aedes ventrovittis* was subsequently reported by Stage, Gjullin and Yates (1952, U. S. Dept. Agr. Handbook 46:66,85) from Fremont County, Idaho, in a locality less than 50 miles SW of the type locality of *A. cacothius*.

During July of 1963 and 1964, I collected extensively in the vicinity of Shoshone Point and obtained biting females of *Aedes hexodontus* Dyar, *Aedes impiger* (Walker), *Aedes pullatus* (Coquillett) and *A. ventrovittis*. The type locality is a large open meadow surrounded by coniferous forests. By far the most abundant species were *A. impiger* and *A. ventrovittis*, which made up 25% and 65% of the collections, respectively. No larvae were found, but sweeping collections of male *A. ventrovittis* were obtained. I revisited the area on July 3, 1965, and obtained larvae of *A. ventrovittis* in snow pools in the open meadow. They were associated with *A. impiger* and *A. pullatus*. On the same date I collected *A. ventrovittis* larvae near Grebe Lake, Yellowstone National Park, a locality 25 miles north of Shoshone Point. This collection was in a large meadow at 7,900 feet. The dominant associated species was *A. impiger*.

I obtained a loan of a female syntype of *A. cacothius* from Alan Stone of the U.S. Department of Agriculture at the U.S. National Museum. Dr. Stone informed me that three of the original six syntypes had been transferred to *A. impiger*, but that the three remaining, one of which had been designated the lectotype, were conspecific and belonged to another species. Careful comparison of the syntype with *A. ventrovittis* material from the type locality revealed them to be indistinguishable. *Aedes cacothius* Dyar should therefore be reduced to a synonym of *A. ventrovittis* Dyar.

*Aedes ventrovittis* appears to have a rather extensive distribution in the Rocky Mountains. On May 26, 1964, I collected larvae of *A. ventrovittis* in Logan Canyon, Cache County, Utah, at an elevation of 7,500 feet. The pool was a grassy roadside snow-melt pool in an open meadow. Associated *Aedes* larvae included *A. hexodontus*, *A. impiger* and *A. pullatus*.—LEWIS T. NIELSEN, Department of Biology, University of Utah, Salt Lake City, Utah 84112.